

Interceptor Thermal Protection Systems

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The official link for this solicitation is:

<http://www.acq.osd.mil/osbp/sbir/solicitations/sbir20152/index.shtml>

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Description:

Objectives for future missile defense applications include increased kinematic reach. One method of maximizing kinematic reach is through inert mass reduction. Interceptors require a significant amount of thermal protection system materials to survive fly-out trajectories. An example of current state-of-the-art material for thermal protection systems has a density of approximately 1.72 g/cm³ (0.06 lbm/in³) and possesses a thermal conductivity of approximately 0.36 W/m-K. Innovative material solutions are sought to extend beyond the state-of-the-art. Robustness may be addressed within the thermal protection system by integrating features that address Electro-Static Discharge (ESD), Electromagnetic Impulse (EMI), and Lightning Strike. Improvements in affordability may be addressed through manufacturing processing or component integration. Additional features for potential integration are antennas, cables & connectors, raceways, etc. The advanced material must be dimensionally and chemically stable during typical missile storage and flight environments. PHASE I: Evaluate the feasibility of the material concept, backed with proof-of-concept material testing. Provide estimated performance and reliability characteristics. PHASE II: Continue development of the material and associated concepts through detailed design and analysis including fabrication of material and subscale hardware. Developmental testing should be conducted to validate modeling and property databases. Evaluate material aging affects. Provide in-house and independent verification and validation. Provide performance and reliability characteristics. Phase II should conclude with an updated design based on test results. PHASE III: Demonstrate the scalability of the developed technology, transition the technology to a missile defense system integrator or payload contractor, and ensure maturity for operational insertion. Demonstrate operation in a missile

defense system or in a system level test-bed. Plan insertion into a missile defense application. Commercialization: Develop and execute a plan to manufacture the prototype developed in Phase II, and assist in transitioning this technology to the appropriate missile defense system integrator for engineering integration and testing.